

**UNITED STATES OF AMERICA  
BEFORE THE NATIONAL LABOR  
RELATIONS BOARD**

POLYTECHNIC INSTITUTE OF  
NEW YORK UNIVERSITY,  
Employer

and

Case No. 29-RC-12054

INTERNATIONAL UNION, UAW,  
Petitioner

PETITIONER'S REQUEST FOR REVIEW

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This case raises the issue, which is also pending before the Board on the Request for Review in New York University, Case No. 2-RC-23481, of the continued viability of the holding in Brown University, 342 NLRB 483 (2004), that graduate assistants are not entitled to the protection of the Act. In Brown, the Board categorically excluded all graduate assistants from the definition of "employee" in section 2(3) of the Act, despite the absence of any statutory basis for such an exclusion. The Board in Brown overruled the decision issued just four years earlier in New York University, 332 NLRB 1205 (2000) (NYU I), which held that graduate student employees are employees within the meaning of the Act. The Petitioner asks the Board to reconsider the decision in Brown and return to the holding of NYU I.

In remanding Case No. 2-RC-23481, the other case raising this issue, to the Regional Director for Region Two, the Board noted that Brown relied on "policy considerations extrinsic to the labor law we enforce and thus not properly considered in determining whether the graduate students are employees." New York University, 356

NLRB No. 7 (NYU II), sl. op. at 1. The Board in NYU II also noted the Union's argument that Brown "is inconsistent with the broad definition of employee contained in the Act and prior Board and Supreme Court precedent" Id. That case is now before the Board on a full record, awaiting action.

In the instant case, the Petitioner seeks to represent a unit composed of three classifications of student-employees of Polytechnic Institute of New York University ("the Employer," "the Institute," or "NYU Poly"). Specifically, the Union seeks to represent Graduate Assistants ("GAs"), Teaching Assistants ("TAs"), and Research Assistants ("RAs"). The Regional Director found that the individuals in all three classifications have both an academic relationship and an economic relationship with the Employer (Dec. at 14). Despite the economic relationship between these student-employees and the Employer, the Regional Director dismissed the petition on the authority of Brown, which he found to be binding on regional directors (Dec. 15). In addition, he found that, if the Board reverses Brown, the RAs would be precluded from organizing based upon the authority of Leland Stanford Junior University, 219 NLRB 621 (1974), but that the TAs and the GAs would have the right to organize.

For the reasons stated in our Request for Review in New York University, Case No. 2-RC-23481, the Petitioner respectfully requests that the Board grant review in this case and overrule Brown. As discussed in greater detail in that Request for Review, Brown is inconsistent with the broad language of §2(3) of the Act, conflicts with extensive Supreme Court and Board precedent interpreting the term "employee" in §2(3), defies logic, and is unsupported by empirical research. In addition, for the reasons discussed below, Leland Stanford does not support the Regional Director's

finding that RAs are not employees. Therefore, the Petitioner requests that the Board grant review and direct an election in the unit sought by the Petitioner.

## **I. FACTS**

### **A. The Employer's Operations**

The Employer is a private school of engineering, with its main campus located in Brooklyn, New York (Dec. 3, 4).<sup>1</sup> The Institute describes its mission: "To excel as a leading high-quality research university engaged in education, discovery and innovation with social, intellectual and economic impact in the New York Region, the nation and the world." (Dec. 3). It considers itself to be "the New York metropolitan area's preeminent resource in science, engineering and technology education **and research**." (Er. Ex. 8, p. 11) (emphasis added). The student body includes 1500 to 1700 undergraduate students, around 2000 students pursuing master's degrees, and about 200 PhD students (Dec. 3, 5, 8). The Institute offers Bachelor of Science degrees in 16 disciplines, master's degrees in 34 disciplinary specialties, and PhD degrees in 11 disciplines (Dec. 3). The faculty is grouped into 11 departments, each of which is led by a Department Head who is a member of the faculty in that department (Dec. 3).

Research is a primary function of the Employer. NYU Poly is classified as a "research university with high research activity," (Tr. 373). The Institute's Mission Statement describes NYU Poly as a "leading, high-quality research university...." (Er. Ex. 8, p. 4). As noted above, the Institute's catalog begins by describing the functions of the school as education and research (Id., p. 11). Dr. Kurt Becker, Associate Provost

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<sup>1</sup> Citations to the record shall be indicated:

Decision and Order of the Regional Director.....	Dec. (followed by page number)
Employer Exhibits.....	Er. Ex. (followed by Exhibit number)
Petitioner's Exhibits.....	Pet. Ex. (followed by Exhibit number)
Transcript.....	Tr. (followed by page number)

for Research and PhD Programs, referred to the “research enterprise” of NYU Poly (Tr. 325). Dr. Bruce Garetz, the Head of the Department of Chemical and Biological Sciences, testified that “research is an important part of what the University does, in addition to ... the teaching.” (Tr. 496). Thus, the Institute exists for two purposes: to provide education and to generate original research.

**B. Graduate Assistants**

GAs are master’s degree students working in hourly-paid jobs in the Graduate Student Employment and Training (“GSET”) Program (Dec. 5, 7). As the Regional Director explained in detail, the GSET Program is designed to ensure that the work performed by the GAs helps to prepare them for careers following completion of their degrees (Dec. 5-6). The Employer requires GAs to complete I-9 forms, documenting their eligibility to work in the United States, and pays them through its payroll system (Dec. 6-7). Most GAs work under the supervision of a faculty member. The Student Employee Handbook includes a supervisor’s section that advises the supervisors that GAs are considered to be employees entitled to the protections of state and federal employment laws (Dec. 7). The student employees must report their hours worked (Dec. 7). The supervisor is responsible for ensuring that the GAs perform assigned duties and report for work during scheduled hours (Dec. 7). The Regional Director concluded that GAs have an economic relationship with the Employer, performing work for the Institute that benefits the Institute (Dec. 14).

**C. Teaching Assistants**

TAs are PhD students, normally in the first years of their studies, who work in undergraduate “teaching laboratories.” The Employer offers these teaching laboratories

to provide undergraduate students experience conducting scientific experiments (Dec. 9, 10). TAs lay out the equipment that the undergraduate students will need for the experiments before the students arrive (Dec. 9). When the undergraduate students arrive at the lab, the TAs oversee small groups of students as they conduct experiments, questioning the students to ensure that they understand what they are doing and answering their questions (Dec. 9). In particular, TAs are expected to ensure that the undergraduates follow proper safety procedures. They may also grade work of the undergraduate students (Dec. 9). TAs perform these duties under the direction of a faculty member who is in overall charge of the laboratory (Dec. 9). Some faculty members perform similar teaching functions in the laboratories, while others leave the TAs in charge of the laboratories (Dec. 9).

The Employer pays the TAs a stipend and provides health insurance to the TAs (Dec. 9-10). The Employer supplies a letter to each TA, stating the amount of the stipend and informing the TA that she must work approximately 20 hours per week (Dec. 9). TAs are paid through the Employer's payroll system, with income taxes deducted (Dec. 10).

**D. Research Assistants**

After completing the first year of PhD studies, a student must pass a qualifying exam in order to be considered a PhD "candidate." (Dec. 10). The PhD then candidate selects a dissertation committee and makes an oral presentation to the committee on his proposed dissertation research project (Dec. 10). If the candidate passes this oral examination, he can become an RA (Dec. 10). The Employer issues appointment letters to RAs that are very similar to the appointment letter provided to TAs, specifying

the compensation to be received, including the monthly stipend, and requiring the RA to allocate 20 hours per week to the performance of assigned tasks (Dec. 11). Like the TAs, the stipend is paid through the Employer's payroll system, subject to income tax withholding (Dec. 12).<sup>2</sup>

RAs conduct research under the direction and supervision of their thesis advisors (Dec. 11). In general, much of the work performed by RAs coincides with their dissertation research, but their work is not limited to their dissertation topics (Dec. 11). Salaried post-doctoral researchers perform duties similar to the RAs (Dec. 11). The Employer's witnesses explained that the difference between an RA and a post-doctoral researcher is that the latter is farther advanced in his knowledge and is therefore able to work with greater independence and less supervision (Tr. 355, 485-86). Thus, the Employer must provide more supervision to the RAs than to the post-docs, who are admitted to be employees and perform similar work.

Nearly all of the funding for the pay and benefits of RAs comes from externally funded grants and contracts (Dec. 12). Funding is provided by federal agencies, state and local governments, and industry or other private sponsors (Dec. 12). At least  $\frac{3}{4}$  of this funding is supplied by federal agencies, including the National Science Foundation and Defense Department agencies (Dec. 12). Grants are awarded to support particular

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<sup>2</sup> There are at least two PhD candidates at NYU Poly who are supported by grants directly from their national governments, one from the People's Republic of China, and one from Saudi Arabia. These individuals receive their funding directly from their governments and are not paid through the Employer's payroll system (Tr. 381). The Regional Director stated, "The Petitioner does not seek any research assistant that is funded by a foreign government." (Dec. at 5, fn. 7). While it is true that the Petitioner does not seek to represent these individuals who are funded by their home governments, the record reflects that these students are not classified as research assistants (Tr. 491-92). Unlike the research assistants, these students do not perform services for NYU Poly in exchange for compensation. The Petitioner does seek to represent all research assistants.



research projects designed by faculty members, but the funding is supplied to the Institute, not to the faculty member directly (Dec. 12-13).

NYU Poly operates an Office of Sponsored Research ("OSP") to assist faculty in obtaining and administering grants (Dec. 12). This office helps faculty members to identify potential sources of funding for their research, prepare budgets for grant proposals, and comply with regulatory requirements (Dec. 12). OSP has the ultimate authority to sign off on all grant applications on behalf of NYU Poly (Dec. 12). Put concisely, the function of the pre-grant section of OSP is "to help the faculty members get money" for NYU Poly (Tr. 394).

The substance of a grant proposal is written by a faculty member referred to as the Principal Investigator or "PI" (Tr. 384, 393, 493-94). The grant proposal must include a description of the nature of the research to be performed, an explanation of how the anticipated results will advance human knowledge, and an account of how the research will benefit society (Tr. 394, 508-09; Pet. Ex. 20, p. ER000449). The budget for the proposal will include the stipends of the RAs working on the project, which are categorized as "personnel costs." These personnel costs include the "salaries" of the RAs and a formula for the reimbursement of fringe benefit costs, including health insurance and tuition remission for RAs (Tr. 396, 511-12; Pet. Ex. 19, p. 16, 61, 62; Pet. Ex. 20, p. ER000473). The salaries and benefits for RAs performing research funded by external grants are categorized as "direct labor." (Tr. 398). The grant will also contain a payment for "facilities and administration" or "F&A," which is intended to help to cover a portion of the overhead of the Institute (Tr. 402).

If a grant is awarded, “[A]ll University personnel have a responsibility ... to use such funds prudently, ethically, and ***for the purpose for which they are designated.***” (Pet. Ex. 19, p. 3) (emphasis added). In particular, this means that the Employer in general and the PI in particular must ensure that RAs do work that will fulfill the conditions of the grant (Tr. 396, 408).

Money received from external grants is considered “gross income” to NYU Poly (Pet. Ex. 19, p. 12). In the fiscal year which ended June 30, 2010, the Institute received more than 14 million dollars in such income (Dec. 13, fn. 25). With total operating revenues of just over \$100 million, this represents nearly 14% of revenues (Pet. Ex. 25). RAs perform work on these grants, thus helping to generate this income.

The work performed by RAs affords other benefits to the Institute. The publication of research conducted by RAs enhances the reputation of NYU Poly and of the PI who supervised the research (Tr. 385-87). The affiliation agreement between NYU and the Institute requires the Institute to increase the dollar amount of research that is conducted under the direction and supervision of its faculty (Tr. 370-71). Therefore, research conducted by RAs helps the Employer to fulfill the conditions of the affiliation agreement. Finally, NYU Poly is involved in an effort to increase the amount of revenues received from the intellectual property of the Institute (Tr. 369). NYU Poly owns the right of first refusal to the patent rights to any research conducted on campus, including research by RAs (Dec. 13). Indeed, the Institute requires RAs to sign patent agreements recognizing the Institute’s rights in the product of their research (Dec. 13).

## II. ARGUMENT

### A. The Board Should Grant Review, Overrule *Brown*, and Restore Legal Protections for the Right of Graduate Student Employees to Organize

The Union has set forth in detail the reasons to grant review and overrule Brown in its Request for Review in New York University, Case No. 2-RC-23481, filed in June. As explained in great detail in that Request for Review, the broad language of §2(3) of the Act encompasses employees who are also students. The Brown decision is inconsistent with Supreme Court and Board precedent which has consistently given a broad and inclusive reading to the term “employee” in the statute. NLRB v. Town and Country Electric, Inc., 516 U.S. 85 (1995); Sure-Tan, Inc. v. NLRB, 467 U.S. 883 (1984); NLRB v. Hendricks County Rural Elec. Membership Corp., 454 U.S. 170 (1981); Phelps Dodge Corp. v. NLRB, 313 U.S. 177 (1941); Seattle Opera Association, 331 NLRB 1072 (2000), *enfd.*, 292 F.3d 757 (D.C. Cir. 2002); Boston Medical Center, 330 NLRB 152 (1999).

Granting enforcement of the Board order in Seattle Opera, the D.C. Circuit distilled this case law into a two-part test: “[I]t is clear that where he is not specifically excluded from coverage by one of section 152(3)’s enumerated exemptions the person asserting statutory employee status does have such status if (1) he works for a statutory employer in return for financial or other compensation; and (2) the statutory employer has the power or right to control and direct the person in the material details of how such work is to be performed.” 292 F.3d at 762 (internal citations omitted). As there is no statutory exclusion for employees who are also students or primarily students, Brown’s categorical exclusion for graduate student employees is inconsistent with the language of the Act and the cases interpreting §2(3).

The Board majority in Brown did not dispute that graduate assistants are employees under this common law test. Rather, it based its holding on conjecture that collective bargaining by graduate student employees would harm academic freedom and damage the mentoring relationship between students and their faculty advisors. As we argue in our request for review in New York University, there is no empirical basis for this conjecture, and the available evidence tends to contradict these assumptions. Finally, the Brown decision creates a false dichotomy between teaching and learning, between being a student and being an employee. The Board has a long history of applying the Act to apprentices, despite the fact that apprentices, like graduate assistants, are both students and employees who learn while working. Chinatown Planning Council, Inc., 290 NLRB 1091, 1095 (1988); General Motors Corp., 133 NLRB 1063, 1064-65 (1961); Newport News Shipbuilding and Dry Dock Co., 57 NLRB 1053, 1058-59 (1944). These arguments are fully developed in our Request for Review in New York University, and we refer the Board to the brief submitted in that case.

However, the Regional Director in this case made a couple of findings that warrant further comment. First, he wrote that the Board's decision in Brown "return[ed] to its pre-New York University (NYU I), 332 NLRB 1205 (2000) precedent, inaugurated in the early 1970's, which held that graduate assistants were not statutory employees." (Dec. 14). In fact, there was no such precedent prior to NYU I. The Regional Director presumably was referring to two cases cited by the Brown majority, Adelphia University, 195 NLRB 639 (1972) and Leland Stanford Junior University, 214 NLRB 621 (1974). Neither of these cases held that graduate student workers performing services for

compensation under the direction and control of an employer are not employees under Section 2(3).

In Adelphia, the Board held that graduate assistants should be excluded from a faculty bargaining unit because the student workers did not share a community of interest with the faculty members. 195 NLRB at 640. This conclusion was based, in large part, on the fact that the student workers were "guided, instructed, and corrected in the performance of their assistantship duties by the regular faculty members to whom they are assigned." *Id.* Adelphia did not hold that the graduate assistants were not employees under the Act, and "[n]othing in the Board's decision suggests that the graduate assistants could not have formed a bargaining unit of their own." Brown, 342 NLRB at 495 (Members Liebman and Walsh, dissenting).

Similarly, Leland Stanford did not hold that graduate student workers are categorically excluded from the definition of "employee" in Section 2(3). As discussed in greater detail below, that case held that a petitioned-for unit of research assistants were not employees because their relationship with the employer "is not grounded on the performance of a given task where both the task and the time of its performance is designated and controlled by the employer." 214 NLRB at 623. In other words, these particular research assistants were not common law employees because they did not perform services for the university. The petitioned-for RAs in Leland Stanford were not employees under Section 2(3) on the specific facts of that case because they failed to meet one of the key factors in the common law test: they did not perform services for the employer under its direction and control. See, e.g., Seattle Opera, 292 F.3d at 762.

Thus, there was no precedent prior to Brown holding that graduate assistants were not employees.

The Regional Director found that employees in all three classifications sought in the petition have “an economic relationship with the Employer.” He elaborated:

All three classifications perform work for the university that benefits the university. Graduate Assistants work throughout all departments of the Employer assisting faculty members and staff in performing their duties for the Employer. For example, evidence was adduced that showed that GAs in the Graduate Center developed technology to assist the Employer in its efforts to filter through the thousands of applications it receives each year. Similarly, it was revealed that some GAs assist faculty members in their research projects. Teaching Assistants’ work benefits the university by helping faculty members teach laboratory courses.

(Dec. 14). The Regional Director similarly made findings, discussed in greater detail below, regarding the services provided by RAs to the Institute (Dec. 15). Thus, he found that the employees in the petitioned for unit perform services for the Employer, under its direction and control, in exchange for money. Under the vast majority of cases interpreting section 2(3) of the Act, and, unlike Leland Stanford, this would mean that they are employees.

Nevertheless, the Regional Director found, “Considering all the evidence, it would appear that the balance of the evidence still weighs in favor of a conclusion that the petitioned-for unit has more of an academic relationship to the university than economic.” (Dec. 15). The decision contains no explanation of how this balance was struck, other than a citation to Brown. The Regional Director points to a number of factors that he considered in concluding that the GAs, TAs and RAs have both an economic and an academic relationship to the Employer, but he does not explain which of these factors were relevant to this balancing process, how he assigned weight to

these factors, or how he decided that the academic relationship outweighed the economic. This is not surprising, because the entire idea of deciding whether an individual is “more of a student” or “more of an employee” is based upon the idea that there is some conflict between the two. The evidence set forth in the Regional Director’s decision convincingly establishes that the individuals in all three classifications are **both** employees and students. The Employer recognizes that other laws governing employment relationships apply to these individuals in their capacity as employees. There is no justification for finding that, simply because they are also students, they should be deprived of the right enjoyed by other employees to engage in collective bargaining.

Accordingly, the Board should grant review and reverse Brown.

#### **B. RAs Should be Included in the Unit**

The Regional Director also held that, even if the Board overrules Brown, the RAs would still be excluded from the protection of the Act. He based this holding on the fact that compensation for the RAs is funded by external grants. According to the Regional Director, Leland Stanford and NYU I stand for the proposition that research assistants funded by external grants are not employees. That conclusion entails a substantial misreading of those cases and is not based upon the terms and conditions of employment of the RAs at NYU Poly.

Neither Leland Stanford nor NYU I stands for the proposition that all RAs performing work that is supported by outside funding sources are excluded for the statutory protection for “employees”. The RAs in those two cases were found not to be employees on the facts of these particular cases because the record did not establish

that the RAs involved performed services for the university under its direction and control. In finding RAs not to be employees in Leland Stanford, the Board concluded that they worked only for the benefit of their education. The Board found, “It is clear that the policy of Stanford is to provide financial aid for its graduate students by means of a stipend for doing what it required of them to earn their degrees.” 214 NLRB at 622. “The amount received by an RA is not determined by the services rendered.” Ibid. “Significantly, the payments to the RA’s are tax exempt income.” Ibid. In summarizing the evidence, the Board found:

Based on all the facts, we are persuaded that the relationship of the RA’s and Stanford is not grounded on the performance of a given task where both the task and the time of its performance is designated and controlled by an employer. Rather it is a situation of students within certain academic guidelines having chosen particular projects on which to spend the time necessary, as determined by the project’s needs. The situation is in sharp contrast with that of research associates, who are full-time professional employees who have already secured their Ph. D. degrees and work at research under direction, typically of a faculty member. Research associates are not simultaneously students, and the objective of a research associate’s research is to advance a project undertaken by and on behalf of Stanford as directed by someone else.

214 NLRB at 622.

The Board in NYU I applied followed Leland Stanford to find that research assistants in the physical sciences were not employees:

For the reasons set forth by the Regional Director, we agree that the Sackler graduate assistants and the few science department research assistants funded by external grants are properly excluded from the unit. *Leland Stanford Junior Univ.*, 214 NLRB 621 (1974). **The evidence fails to establish that the research assistants perform a service for the Employer and**, therefore, they are not employees as defined in Section 2(3) of the Act.

332 NLRB at 1209, n. 10 (emphasis added). The record in this case stands in sharp contrast to the findings in these two cases.



The evidence convincingly establishes that RAs do perform services for NYU Poly under the direction and control of a faculty member, like the research associates in Leland Stanford who the Board held to be employees. The Institute derives extensive benefits from the research conducted by RAs. Research performed by RAs helps to bring in money to the Employer, money that the Employer needs. Income from research grants constitutes nearly 14% of the revenue of the Employer, and the Employer must increase that income in order to satisfy the conditions for affiliation with NYU. RAs perform services that help to bring in that income. Not only do the grants cover the salaries and benefits of the RAs, a percentage is added on to all costs, including RA salaries, to cover the overhead of the Institute. In addition to grant income, the Employer attempts to commercialize any patentable ideas or products generated by its research. If an RA's research produces valuable intellectual property, it becomes the property of NYU Poly.

The benefit to NYU Poly from the work of RAs is not limited to economic value. Research conducted by RAs that leads to publication enhances the prestige of the Institute and its faculty. Moreover, at the most fundamental level, NYU Poly exists to conduct original research. The mission of the Institute is twofold: to educate students and to produce original research. Research is thus one of the products that the Employer exists to produce. When RAs generate original research, they are producing that product. The record establishes that, unlike Leland Stanford and NYU I,<sup>3</sup> RAs funded by external grants perform services that benefit the Employer.

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<sup>3</sup> In the decision on remand in NYU II, the Acting Regional Director found that RAs in the hard sciences at New York University are now common law employees.

The Regional Director made the rather puzzling factual finding that “like the RAs involved in Leland Stanford and NYU I, Polytechnic’s RAs do not seem to perform work directly for this Employer.” This conclusion is impossible to reconcile with the Regional Director’s findings of fact regarding the work performed by these RAs. He found that the funding for research is awarded by the funding source to the Employer, based upon a proposal prepared by the PI. The PI, of course, is an employee and agent of the Employer. The PI will then choose the RA to work on the project for which the PI has obtained funding, (Dec. 11). The RA is paid out of funds that have been awarded to the Institute. That is, the Regional Director found that the funds used to support research conducted by RAs is awarded to and belongs to the Institute for the purpose of conducting a research project defined by an agent of the Institute. That agent then selects an RA to assist with the research that he wishes to conduct, and the RA is paid by the Institute for working on that research. It is difficult to understand the Regional Director’s conclusion that the RA is not working for the Employer.

Indeed, the record establishes that NYU Poly admits students based upon their ability to perform research of interest to the Employer’s faculty members. Openings for PhD students in the various departments are allocated based upon the amount of external funding anticipated by each department. Because students in the first year or two are required to attend classes, they are not available to conduct research during those years. Therefore, each department must project the amount of externally funded research that they will have a year or so hence (Tr. 344, 468, 486-87, 499-500). When selecting a student, departments look for applicants with an interest in and the ability to conduct the particular research that a faculty member in the department anticipates will

be funded (Tr. 339-40, 469, 472). Most applicants are admitted with the expectation that they will be working with a particular faculty member conducting a particular type of research (Tr. 339-40). While there are academic requirements, the ability to perform needed research is a critical factor in the selection process (Tr. 340). This process of recruiting is typical of an employer's hiring process: departments seek applicants with strong academic credentials with a demonstrated interest and ability to perform the type of research that the faculty member expects will be funded. When they become RAs, they begin to perform the work for which they were selected.

The Regional Director also found that RAs work under the direction and supervision of their PIs:

[The Employer's] policies provide that the university and the Principle (sic) Investigator must ensure that the individuals listed as working on the grant are in fact doing work to fulfill the objectives of the grant. The policies also require the employer to submit time and effort reports to the funding agency multiple times each year detailing the percentage of time spent on the project by all participants.

(Dec. 13). The Employer supervises the work of RAs to ensure that the work that they perform is consistent with the research project described by the PI and approved by the funding agency. Accordingly, the RAs perform services for the Employer under its direction and supervision. In addition, as the Regional Director noted, unlike Leland Stanford, the payments to RAs are not tax exempt. Clearly, these RAs, unlike the RAs in Leland Stanford and NYU I are performing work for the Employer.

To summarize, the record in this case establishes that research is one of the "products" that NYU Poly produces. That research provide financial and other benefits to the Institute. Students funded by external grants play a major role in the creation of that product. They are paid a salary for doing that work. Externally funded grants

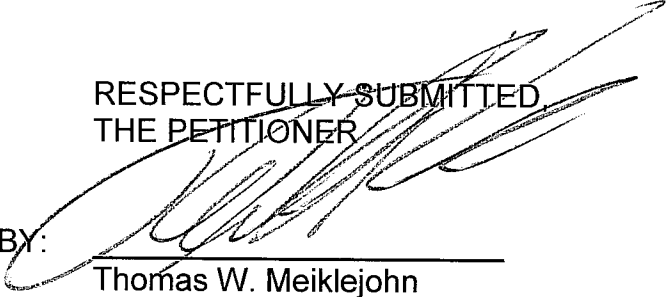
specify the nature and amount of work that an RA supported by the grant is expected to perform. The PI in charge of the research is responsible for ensuring that the work performed by each RA is consistent with the requirements of the grant. The performance of this work will, in many but not all cases, be related to and further the education of the RA, but that does not detract from the fact that the work benefits the Institute as well. As noted above, apprentices advance their education by performing work under the guidance of journeymen, but they have always been considered to be employees under the law. The record in this case leaves no doubt that RAs funded by external grants are paid to perform services for the Employer under its direction and control. Therefore, the finding should be made on the basis of this record that all RAs are employees within the meaning of section 2(3) of the Act.

### III. CONCLUSION

The Board should grant this Request for Review and direct an election in the petitioned-for unit.

RESPECTFULLY SUBMITTED,  
THE PETITIONER

BY:

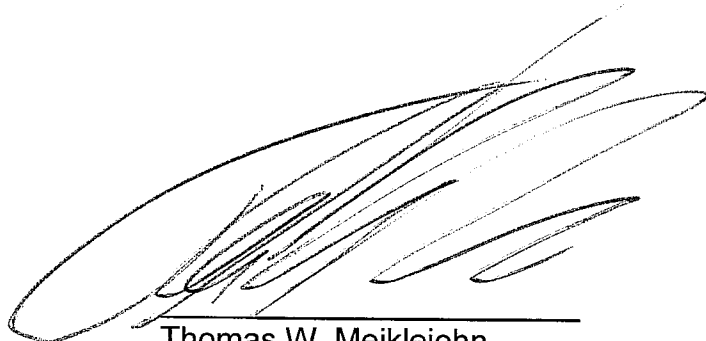
  
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## CERTIFICATE OF SERVICE

This hereby certifies that the foregoing Brief of the Petitioner was electronically mailed, on this 13<sup>th</sup> day of September 2011 to all counsel of record as follows:

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TRANSCRIPT  
PAGES

VOLUME 3

OFFICIAL REPORT OF PROCEEDINGS

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NATIONAL LABOR RELATIONS BOARD

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OFFICIAL REPORTERS

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1 A My current position is associate provost for research and  
2 PhD programs. It was recently changed from associate provost  
3 for research and technology initiatives to the new position.  
4 And I also hold a faculty position in applied physics.

5 Q You're a professor of applied physics.

6 A Professor of applied physics.

7 Q And how long have you been at the Polytechnic Institute?

8 A I joined Poly on March 1, 2007.

9 Q And what positions have you held at Poly?

10 A I started out as associate provost for research and  
11 technology initiatives until about two months ago. And then the  
12 responsibilities were changed to research and PhD programs.

13 Q And what responsibilities do you have in your current  
14 position?

15 A My current position, I oversee the research enterprise.  
16 That includes the Office of Sponsored Research. That includes  
17 the research centers. That also includes interactions with our  
18 representatives at the various governmental levels, state,  
19 federal, as well as city. In my capacity as associate provost  
20 for PhD programs, I have academic oversight over our PhD  
21 programs. And that includes evaluating the programs, looking at  
22 proposals for new PhD programs, and generally making sure that  
23 all the university rules and regulations are followed when we  
24 present a list of PhD candidates to the board of trustees for  
25 degree approval.



1 more.

2 Q Is there a certain point in time when the doctoral student  
3 transitions into doing all or virtually all of his or her work  
4 in research?

5 A Again, it depends a little bit on the department. But I  
6 would say towards the very end, say the last year of a PhD  
7 thesis is almost exclusively spent on research; although, some  
8 departments have some advanced required courses that can go into  
9 the fifth year of a PhD student. It's department dependent.

10 Q If you look at the catalogue that we marked as Exhibit 8,  
11 there is a description I believe of the requirements and  
12 policies for the Doctor of Philosophy grade. I call your  
13 attention to Page 29 and 30.

14 A Yes.

15 Q Is that an accurate description of the institute's  
16 policies and requirements for the PhD degree?

17 A Yes, it is.

18 Q Now I want to ask you about on Page 30 under admissions  
19 there's two statements here I want to ask you about. First  
20 about halfway through the catalogue states that because doctoral  
21 research is a one to one match between an applicant's research  
22 interest and those of the faculty member, applicants need to  
23 discuss their interest with the faculty in their program of  
24 interest. Can you explain what that means in terms of the  
25 application process?

1 A It means that the applications usually come to the  
2 department and the department preselects some of the PhD  
3 students it accepts depending on their expressed research  
4 interest and the research strengths of the department. So they  
5 want to assure that once a student comes, there will be faculty  
6 advisor so that the student's interests are not in astronomy  
7 when the physics department goes mostly condensed matter  
8 physics. So there is a pre-selection of all the accepted  
9 students that satisfy all minimum academic requirements, who is  
10 going to be accepted in to the program depending on -- it's  
11 always a guess game because the students may change their minds.  
12 But we try to really admit students that have a very high  
13 probability to find a faculty advisory to original thesis  
14 research.

15 Q Can you explain the reference to doctoral research being a  
16 one to one match between an applicant's research interest and a  
17 faculty member?

18 A Doctoral applicants to a PhD program typically don't  
19 select a university because of the university. They select it  
20 because of a PhD program. And even more specifically because of  
21 a particular faculty member that they would like to work with.  
22 Because is it that faculty member's research interest is closest  
23 to what they think their own research interest could be or  
24 should be.

25 Q Then later on in that paragraph, the catalog states that

1 students.

2 Q I'm not sure if we mentioned it already, but also are some  
3 students supported as research assistants?

4 A Yes. The vast majority of all PhD students is actually  
5 supported as research assistant.

6 Q And you have responsibility for the teaching assistant  
7 program?

8 A I have responsibility for the allocation of the financial  
9 aid that comes with the teaching assistant program, yes.

10 Q Why don't you tell us what your responsibility is and how  
11 you carry it out in that respect?

12 A Well, it is basically every year our budget has line item  
13 that says teaching assistant support. And it is typically 25  
14 teaching assistantships. And then my responsibility is to  
15 distribute these over the 10 programs that we have. And what I  
16 take into consideration by doing that is what is the PhD student  
17 population in a given department, what is their external  
18 research funding, because one of the things we like to do with  
19 our teaching assistants, transition them fairly quickly, after  
20 one year, no later than after two years from an institutional  
21 supported teaching assistant to a grant supported research  
22 assistant. So those departments that have more research funding  
23 have naturally more PhD students and they get a larger  
24 allocation of teaching assistantships.

25 Q And how long do PhD students most typically remain as a

1 you work again under the supervision of a faculty member but  
2 with a much greater degree of independence as a graduate  
3 assistant would. So that's the time when, to put it  
4 differently, when you shape your scientific resume.

5 Q And again how would you distinguish what a post-doctoral  
6 fellow was doing from what a research assistant was doing?

7 A As somebody who hires a post-doctoral fellow, I would  
8 expect a lot more independence and ability to make decisions,  
9 and take the research project in a new direction form a  
10 post-doc. I would not have this expectation of a graduate  
11 student or graduate research assistant.

12 Q If you walked into a lab, would it be possible for you to  
13 distinguish the post-doc from a research assistant and if so how  
14 would you do that?

15 A I would start engaging them in the conversation and  
16 probably within a few minutes I can tell you this guy is a  
17 post-doc or is a PhD student simply by the level of maturity in  
18 the conversation.

19 Q In terms of maturity in terms of what?

20 A Typically, in terms of, put it this way, graduate research  
21 assistants tend to be focused exclusively on their one project  
22 that they are working on, whereas post-docs have a bigger view  
23 of the field.

24 Q Now earlier on you talked about a certain number of  
25 research credits being required for the PhD degree.

1           You also used the word commercialization early on in your  
2 testimony to describe I think it's the work that you used to do.  
3 Is that the process of turning patents owned by or intellectual  
4 property owned by the university into or does that include the  
5 process of turning patens into cash, into income?

6     A       Yes, it does.

7     Q       And is this something that the university is seeking to  
8 grow or expand?

9     A       It's fair to say that we along with other universities are  
10 trying to increase the revenue stream from our intellectual  
11 property.

12    Q       Do you still have the catalogue there?

13    A       Yes, I do.

14    Q       This is quite a tome. Could you take a look at Page 17,  
15 please? Now this may not be very important, may not be  
16 important at all. But if you look at Footnote 1, there is a  
17 reference to a Department of Computer and Information Science.  
18 Do you see that?

19    A       That's correct.

20    Q       Is that part of Poly?

21    A       Yes, it is part of Poly. It's a department that also  
22 changed its name over the last three years, the Department of  
23 Computer Information Science to Department of Computer Science  
24 and Engineering.

25    Q       Oh, okay. It's another name for that department, all

1 right. It wasn't important. Now you gave some testimony about  
2 the relationship, the affiliation between NYU and NYU Poly. You  
3 testified that there are some criteria that have to be met in  
4 order for Poly to become a school of NYU?

5 A Yes.

6 Q Do you know what those criteria area?

7 A I know some of them.

8 Q What are the ones that you know?

9 A The ones that I know is an improvement in the  
10 undergraduate student body in terms of the average SAT scores  
11 and the SAT distributions. Another criteria is research  
12 activity per faculty, which is lower at NYU Poly compared to New  
13 York University. And --

14 Q Can you, well, maybe -- go ahead, what else?

15 A There is another one that has to do with financial  
16 stability of NYU Poly. We need to be viewed as a financially  
17 healthy university. Become a school of NYU carries a price tag.

18 Q So getting back to that second criteria which is research  
19 activity per faculty member?

20 A Yes.

21 Q Can you explain how research activity per faculty member  
22 is measured?

23 A There are two or three criteria that applied when you  
24 report to national agencies. One is the research expenditure  
25 per faculty member in a department, as well as the ratio of PhD

1 student to faculty in that department. And the third one is the  
2 number of PhD degrees granted by a department on an annual  
3 basis.

4 Q So the number of degrees granted is a measurement of the  
5 research activity being conducted?

6 A Yes, because of the close relationship between those two.

7 Q Okay. And you said there is a ratio of funding to faculty  
8 member?

9 A There is the ratio of PhD students to faculty.

10 Q Before that there was one that had to do with funding. I  
11 didn't take my notes --

12 A It's the research expenditures per faculty.

13 Q And how do you determine the amount of research  
14 expenditures?

15 A We basically look at, I mean that's a number that's  
16 audited and it's basically all the money, research money that is  
17 spent at Polytechnic Institute of NYU. It's different, well --

18 Q No, go ahead.

19 A No, that's the answer.

20 Q It's different from what?

21 A It's different from the amounts of grants that are being  
22 awarded to NYU Poly.

23 Q So the difference being whether the money is actually  
24 spent or not, is that it?

25 A Yes.

1 research intensive universities or research universities from  
2 doctoral universities. And within the research universities,  
3 there are universities with very high research activity and  
4 universities classified as research universities with high  
5 research activity.

6 Q And how is Poly classified?

7 A We are classified as a research university with high  
8 research activity.

9 Q It take it that it is the objective of Poly as an  
10 institution to meet the criteria necessary to become fully  
11 affiliated with NYU?

12 A That was the idea behind affiliation, yes.

13 Q You want to make it work.

14 A Yes.

15 Q And under the terms of the affiliation agreement, do you  
16 know, did NYU provide funding for Poly?

17 A To the best of my knowledge, there was a \$50 million loan  
18 that was given which we have to repay, partially for new faculty  
19 hires and partially for improvement of the infrastructure.  
20 Separately, the NYU provost set up a \$5 million fund over 5  
21 years to seed joint research collaborations between faculty at  
22 NYU and faculty at NYU Poly. These are to my knowledge the only  
23 financial --

24 Q Contributions?

25 A Yes. And one was a loan. The other one was an actual



1 A Yes.

2 Q And at least in the grant paperwork, these people, the  
3 faculty member in charge of the team is referred to as the  
4 principal investigator or the PI?

5 A Yes.

6 Q And in addition to doctoral students and the PI, who else  
7 works on these teams, if anyone?

8 A There can be co-principal investigators, second faculty  
9 member from the same department, from other university. There  
10 can be post-doctoral fellows, post-doc associates. There can be  
11 in some instances technicians when the research work involves  
12 the use of major instrumentation that required a skilled  
13 technician to maintain it. Occasionally, there is support for  
14 undergraduate students also written into the grant. Some grants  
15 allow partial support for administrative and clerical support.

16 Q What about graduate assistants or hourly paid master's  
17 students, are they sometimes assigned to these teams?

18 A They are sometimes assigned to these teams for specific  
19 tasks.

20 Q They are not funded from the grants, correct?

21 A They are not funded from the grants.

22 Q Are they paid out of the same, through the same human  
23 resource payroll system, however, if you know?

24 A I am not 100 percent sure. I don't know.

25 HEARING OFFICER ANDERSON: One quick question. You said

1 some of the grants offer administrative and clerical payment for  
2 that work?

3 THE WITNESS: Yes.

4 HEARING OFFICER ANDERSON: Who does that administrative  
5 and clerical work?

6 THE WITNESS: Well, these would be administrative  
7 assistants; in some cases, executive assistants.

8 HEARING OFFICER ANDERSON: And these are employees of  
9 Poly?

10 THE WITNESS: These are employees of Poly.

11 HEARING OFFICER ANDERSON: And they are not TA's or RA's?

12 THE WITNESS: They are not TA's or RA's.

13 HEARING OFFICER ANDERSON: Okay. Thank you.

14 BY MR. MEIKLEJOHN:

15 Q How are the post-docs compensated?

16 A Can you clarify what exactly you mean by that?

17 A They get paid a salary?

18 A They get paid a salary.

19 Q Do they get benefits, do you know?

20 A They get benefits.

21 Q Now you gave some testimony about the benefits to the  
22 graduate students serving as research assistants doing their  
23 research. Are there benefits to the PI's of the work done by  
24 the research assistant?

25 A There certainly are. The PI and the graduate research

1 assistant work as a team.

2 Q Go ahead. They are producing original research?

3 A They are producing original research in addition to  
4 training the next generation of scientists.

5 Q And one of the goals of any faculty member at Poly is to  
6 produce original research, is that correct?

7 A Yes.

8 Q And that benefits the university because research is one  
9 of the objectives of the university?

10 A It improves the reputation of the university.

11 Q And it improves the chances of the university's  
12 affiliation being successfully concluded?

13 A It's part of it.

14 Q And it also benefits the principal investigator to have  
15 research done in collaboration with a research assistant  
16 published is that right?

17 A Yes.

18 Q Customarily, the name of the PI will be listed on any  
19 published works?

20 A It is.

21 Q Usually first?

22 A Depends on the discipline. In the sciences and  
23 engineering, the principal investigator usually goes last. And  
24 the person who did the most work goes first.

25 Q Okay. And the person who did the most work will often be

1 the RA?

2 A Yes.

3 Q Is there benefits to the PI being published and listed on  
4 a publication?

5 A Yes.

6 Q What are the benefits?

7 A It enhances the standing of the principal investigator in  
8 the community of his or her peers.

9 Q Are there benefits to the university from that  
10 publication?

11 A Yes.

12 Q What benefits?

13 A It will improve the overall ranking of the university if  
14 you as a university generate highly cited, scholarly articles.  
15 That will go into the evaluation that U.S. News and World Report  
16 carries out.

17 Q And is that in particular one of the goals of most  
18 institutions of higher education to get a good score from the  
19 U.S. News and World Report? I would like an answer, if you can?

20 A The answer is yes.

21 Q Okay.

22 MR. MEIKLEJOHN: Can we go off the record for just a  
23 second?

24 HEARING OFFICER ANDERSON: Sure. Off the record.

25 (Discussion off the record.)

1 Pre-award reports to me. Post-award reports to ultimately the  
2 VP for finance.

3 Q Just so it's clear, the Office of Grants and Contracts,  
4 does it still exist or has it been renamed something else?

5 A It has been renamed the Office of Sponsored Research.

6 Q So it is the predecessor of the Office of Sponsored  
7 Research.

8 A Yes.

9 Q And your area of supervision over the Office of Sponsored  
10 Research is the pre-grant portion, pre-award I mean?

11 A It's the pre-awards.

12 Q And with respect to the pre-award function, what is the  
13 purpose of the Office of Sponsored Research?

14 A The Office of Sponsored Research helps bring funding  
15 opportunities to the attention of our faculty. It also helps  
16 them prepare grant proposals. It puts research budgets  
17 together. In the preparation of the proposal, it makes sure  
18 that sponsored agency requirements are satisfied. It has  
19 ultimate authority in signing off on the proposal budget before  
20 it goes in. It also provides some boilerplate information that  
21 most funding agencies require these days in terms of basic  
22 information about the institution, compliance to federal  
23 policies, etc. So it takes that burden away from the principal  
24 investigator so that the principal investigator is responsible  
25 only for the science part and for working with sponsored

1 research in coming up with an appropriate budget for the  
2 proposal.

3 Q So the function is to help the faculty members?

4 A Yes.

5 Q Get money. Is that a gross over-simplification?

6 A No. It's enhancing the chances that the proposal gets  
7 funded. It's a proper characterization.

8 Q All right, thank you. Now, well, let's start you have  
9 seen, well, you have written grant proposals yourself over the  
10 years, correct?

11 A Yes.

12 Q And in your current position, are you still familiar with  
13 what grant proposals contain?

14 A Yes, I am.

15 Q And is it true that the typical grant proposal, in order  
16 to comply with all these regulations that are referenced in  
17 here, that the grant proposals are required to contain a  
18 description of the nature of the research to be done and the  
19 objectives of the research, is that correct?

20 A That is correct.

21 Q And it is also generally true that these grant proposals  
22 will contain -- will identify either by name or by category the  
23 individuals that will be doing the work to complete that  
24 research, is that right?

25 A I would say no to that because most of our grant proposals

1 Q That would include some portion of the salary of the  
2 principal investigator?

3 A Yes.

4 Q And would it also include the stipend to be paid to any  
5 research assistants working on that grant?

6 A Yes, that would be included.

7 Q And those stipends would be categorized in the grant  
8 proposal as salaries, correct?

9 A There is a category in the standard federal budget that  
10 says personnel. And personnel has various categories. And each  
11 category is listed by the amount of funds that they receive.  
12 Whether that is salary or not, I do not know.

13 Q It's listed as a personnel cost?

14 A Yes.

15 Q Okay. And as this book makes clear, the PI and the  
16 institution both have a responsibility to ensure that the funds  
17 expended under the grant are spent to do the research described  
18 in the grant proposal, is that correct?

19 A That's largely correct. There is some leeway in large  
20 grants. But, largely, yes, you cannot deviate from what you  
21 proposed.

22 Q And so both the university and the PI have a  
23 responsibility to ensure that the people listed under personnel  
24 are doing work to fulfill the grant, correct?

25 A Correct.

1 charged to sponsored projects. Do you know whether that  
2 certification applies to the personnel payments to research  
3 assistants?

4 A Let me just read it, please.

5 Q Sure.

6 A So a time and effort reporting includes anybody paid from  
7 a grant, the PI, post-docs, and graduate research assistants.

8 Q So that certification that's referred to in Paragraph 7 is  
9 a time and effort report?

10 A Yes.

11 Q And that applies to the research assistants?

12 A Yes.

13 Q Could you turn to Page 20, under regulatory requirements  
14 for effort reporting, below that you see in italics the word  
15 further. Then it goes on to say direct labor charges are  
16 allowable to the extent that the total compensation to  
17 individual employees conforms to the established policies of the  
18 institution. Do you see that paragraph?

19 A Yes.

20 Q What direct labor charges are they referring to here, if  
21 you know?

22 A Partial salaries of the principal investigator, post-doc  
23 salaries, technicians if they are on the grant, and graduate  
24 research assistants.

25 Q This next question relates to Page 26. I'm not sure you



1 I could not do that.

2 Q It would have to fit within the description contained in  
3 the grant proposal.

4 A Yes.

5 Q Now in addition to -- I'm not sure the documents use  
6 direct costs. But in addition to the work that is paid, the  
7 expenses that are covered on a dollar for dollar basis,  
8 projected to be on a dollar for dollar basis, there is funding  
9 for something called R&A, is that right?

10 A F&A.

11 Q F&A, that's right. What does F&A stand for?

12 A F&A stands for facilities and administration.

13 Q And that's additional funding that the institute receives  
14 under a grant in addition to the costs directly expended, is  
15 that right?

16 A Yes. That's a contribution, an indirect cost  
17 contribution.

18 Q And that is intended to defer or cover a portion of the  
19 costs of the overhead of Poly?

20 A Of maintaining the research infrastructure. That is part  
21 of the operating cost of the Office of Sponsored Research can be  
22 recovered though the indirect cost, utilities -- somewhere in  
23 this document there is actually a list of things that go into  
24 the negotiated facilities and administration rate.

25 Q Yeah, I wasn't going to try to make you go through all of

1 this, but you hesitated in answering that last question from  
2 counsel as to whether grant covered the full cost of a PhD  
3 student's education. What factors were you weighing?

4 A Well, there is an entire academic infrastructure that  
5 needs to exist in which the doctoral students can actually  
6 flourish and get exposure to the business of -- the process of  
7 creating new knowledge that go beyond the hours spent in the  
8 lab. That is offerings by the university to improve their  
9 communications skills, a wide range of colloquial and seminars  
10 that exposes the student to outside views by eminent scientists  
11 or engineers in the field. We have created a collective for PhD  
12 students that helps them with decisions when they apply for  
13 post-doctoral position, so there is an additional support  
14 structure that the university has put in place that we cannot  
15 recover either from the direct cost or the indirect costs.

16 Q I see. In response to an earlier question, you said that  
17 the -- if the research assistant changes direction in his  
18 research could still be funded out of the grant as long as the  
19 work was consistent with the overall objectives of the grant.

20 A Correct.

21 Q My question is whose job is it to see that the work of the  
22 RA is consistent with the overall objectives of the grant?

23 A First and foremost, the principal investigator.

24 Q And there is one other area I neglected to ask you about  
25 that may -- no, no, I have no further questions. I'm not going

TRANSCRIPT  
PAGES

VOLUME 4

OFFICIAL REPORT OF PROCEEDINGS  
BEFORE THE  
NATIONAL LABOR RELATIONS BOARD

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In the Matter of:

Case No. 29-RC-12054

POLYTECHNIC INSTITUTION  
of NEW YORK UNIVERSITY,

Employer,  
and

INTERNATIONAL UNION, UAW,

Petitioner

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Place: Brooklyn, NY  
Dates: June 2, 2011  
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1 in graduate programs, and Iwao Teraoka for graduate programs.  
2 Jin concentrates with the PhD program and Iwao. She also does  
3 masters and Iwao shares in the master's program as well. So  
4 Professor Montclare reviews the applications that come in. She  
5 reviews them. She ranks them based on the quality of the  
6 academic background that these applicants have. The quality is  
7 based on things like undergraduate records, letters of  
8 recommendation, scores on the graduate record exam, and for  
9 foreign students' scores on a total (ph.) exam.

10 At the same time, I am in touch with our faculty members  
11 to find out how many research RA's they hope to pick up a year  
12 later, so I can make an estimate of how many first-year students  
13 we should admit in that year based on the department's needs for  
14 the next several years. And then Jin may also share these  
15 applications with some of the other faculty members who have  
16 large research groups in case there are certain features,  
17 certain applicants that look promising to those faculty. And  
18 based on Jin's determination and discussions with other faculty  
19 members, we sometime in April decide which students we want to  
20 accept into the program.

21 At that point, we send a letter -- we tell the graduate  
22 office that we wish to accept certain students. And the  
23 students we accept, we also offer a TA to, a teaching  
24 assistantship to as a form of financial aid to help these  
25 students as they go through their PhD academic career.

1 Q Let me just stop you there for a second.

2 A Yes.

3 Q In the admission process, is there any effort made to  
4 match up individual applicants with faculty members based on  
5 research interest?

6 A Yes, there is. When, for example, someone like Jin  
7 Montclare works in an area called protein engineering, another  
8 faculty member in the department, Professor Richard Gross  
9 specializes in enzyme catalysis, and if there is some particular  
10 student that Professor Gross, or Montclare, or Professor Levon,  
11 or other of the active research faculty in the department think  
12 would be good for their group, they might ask that that  
13 candidate be put high on the list. So it is both the academic  
14 credentials of the students, of the applicants, and the  
15 potential matches to the research that goes on in the  
16 department.

17 Q Now going back, if you could take us through the academic  
18 progression of the admitted graduate student? I think the first  
19 year you said they are being supported as a teaching assistant.

20 A Correct.

21 Q I'm going to ask you later about what they do as a  
22 teaching assistant. But if you could focus on what course work  
23 and what research are expected?

24 A In the first year, our PhD students are expected to take a  
25 full-time program involving course work. They take the required

1 grants and contracts that faculty members apply for and are  
2 awarded. In my case, I have currently two National Science  
3 Foundation grants, each of which supports one research assistant  
4 in my laboratory. So it's external funding but supports these  
5 research assistants to carry out their dissertation research.

6 Q And how is the -- the student is matched up with the  
7 advisor by the process that you described earlier?

8 A Well, the advisor applies for research grants and has  
9 funding to support let's say three students. And they will look  
10 for three students from the incoming class to take on, to do the  
11 research that's associated with those grants. So it involves --  
12 when one applies for grants, it is usually a year in advance of  
13 when you actually are awarded grants, so you are usually not  
14 applying grants for towards hiring a specific student you have  
15 in mind. You get the grant and then you look for a student who  
16 matches the requirements of that grant.

17 Q And what is the role of the student as a research  
18 assistant?

19 A The student is carrying out an original research project.  
20 The student is being trained to be able to carry out original  
21 research in the real world when they leave the university and  
22 have a job either typically in academia as a professor,  
23 themselves, or in industry as a research scientist, or in  
24 government as a research scientist.

25 Q What is the relationship between the dissertation

1 Q Is there any constraints on that?  
2 to be related to the subject of the grant?

3 A Right. It couldn't be totally separate  
4 know that there is -- I don't know whether the NSF has  
5 specific wording of it, but I'm sure it cannot be totally  
6 divorced from the proposed research. It has to be related in  
7 some way.

8 Q You also mentioned you had experience with post-doctoral  
9 fellows?

10 A Yes.

11 Q And can you describe the difference between what a post-  
12 doctoral fellow and a PhD student/RA would be doing in the  
13 laboratory?

14 A Well, a post-doctoral fellow is someone who has already a  
15 PhD degree, someone who has already had PhD training, and  
16 therefore the expectations, the knowledge and skills that I  
17 would expect from a post-doctoral fellow are considerably  
18 greater than those I would expect from a PhD student. So, for  
19 example, in the case of a post-doctoral fellow, I may ask him or  
20 her to carry out a particular measurement, and I don't have to  
21 go into details of how to do that. They would know how to do it  
22 and they would go carry out the measurement. If I asked the  
23 same of a graduate student, I might have to sit down with them  
24 and go into some detail about what the measurement entails and  
25 what some of the pitfalls might be, basically training them in



1 the process for understanding how to carry out this measurement.

2 Q I believe you already testified to this but with respect  
3 to the research credits that students are enrolled in, are those  
4 credits given for the work that's being done as an RA?

5 A Yes.

6 Q And is that graded?

7 A It is given a grade, yes. I don't know if you want to  
8 know the details of how it's graded?

9 Q Sure, you could tell us.

10 A During the course of the research, the students are given  
11 a temporary grade, S or US, satisfactory or unsatisfactory  
12 grade. And at the end, after the thesis is completed and the  
13 thesis is defended, the dissertation is defended, a final letter  
14 grade is given to the dissertation research. And all those S's  
15 are converted into the final grade, whether it's an A or a B.

16 Q I want to focus now on the TA's. You say you have how  
17 many TA's in the department?

18 A It varies from 2 to 6.

19 Q And how is that determined?

20 A It's determined by the needs of the department for RA's a  
21 year down the road. In other words, if my faculty in total  
22 thinks they will need five RA's in September 2013, then we'll  
23 bring in that many TA's in September of 2012.

24 Q I see. When you talk about the needs of the faculty, how  
25 does that relate to the question of supporting graduate

1 students?

2 A Well, by need, it's the faculty member has to make their  
3 best guess as to how many research fellows, research assistants  
4 they will be able to support in that year. And this is  
5 guesswork because they may not know. They may have some grant  
6 proposals in the pipeline, but they don't know how many of them  
7 will actually be funded and how many will not be funded.

8 Q And when the TA's come in as first-year students, how are  
9 they assigned to particular duties?

10 A We have several undergraduate courses that make use of  
11 most of the TA's, the first-year students who are TA's, and  
12 those courses are general chemistry and organic chemistry. And  
13 it's basically the laboratories of these two courses that  
14 require the TA's. We run it can be as many as 18 sections of  
15 general chemistry in a given semester. Each of these -- these  
16 are laboratory sections. Each section is limited to 20  
17 students. Each week, there is a two-hour laboratory in general  
18 chemistry, where these 20 students carry out an experiment.  
19 They have to be supervised and they carry out this experiment.  
20 So I have to assign to each of these sections, I have to assign  
21 a faculty member, could be a regular faculty member, it could be  
22 an instructor, it could be an adjunct faculty member. And then  
23 under that adjunct faculty member, there will be a TA or a GA,  
24 or some other student who will be a graduate student -- I guess  
25 those are the two possibilities, a TA or a GA, will be working

1 Q Good morning, Dr. Garetz.

2 A Morning.

3 Q You testified that there are four individuals classified  
4 as research faculty in the Department of Chemical and Biological  
5 Sciences?

6 A Yes.

7 Q And what do those four people do?

8 A They carry out research, but they do not have any teaching  
9 assignments. They are not tenured faculty members, but their  
10 funding comes completely from what they bring in from external  
11 sources. They do not get a salary from the university.

12 Q Are they paid through, that is they come with outside  
13 funding, is that right?

14 A Or they have to get outside. It varies from person to  
15 person. Some of them are former tenure-track faculty who  
16 retired from being teachers and doing research, and now they are  
17 continuing just doing research.

18 Q And they have or get funding from some outside source such  
19 as the National Science Foundation?

20 A Such as the National Science Foundation, yes.

21 Q And I'm aware, I looked at the papers with respect to your  
22 research funding and as I understand from other experience as  
23 well, the government requirements are that technically the  
24 funding is awarded to the university, correct?

25 A Correct.

1 Q But the award is based upon a proposal that you draft, is  
2 that right?

3 A Correct.

4 Q Does it work the same way for the research faculty, that  
5 is do they write the grant proposal but the money is awarded to  
6 the university?

7 A Works exactly the same way.

8 Q And are they also paid through the university payroll  
9 system in the same fashion that you are?

10 A Yes.

11 Q And in the same fashion as the research assistants are?

12 A No. They are full-time -- they have full-time  
13 appointments, but the funding of those, and they have an  
14 official salary, annual salary, but they only get that money if  
15 they bring it in from external sources.

16 Q Okay, I understand.

17 A So they are not the same category as research assistants.

18 Q Well, they get paid more. That's one of the differences,  
19 I guess, right? Depends on the amount of the grant, is that it?

20 A Research faculty get paid more than research assistants,  
21 yes.

22 Q And another difference is that they have to apply for and  
23 be awarded their own grants, whereas research assistants are  
24 funded through grants written by the PI. Is that another  
25 difference?

1 responsibilities over Professor Weil?

2 A Yes. I have to sign off on any research proposal he  
3 submits.

4 Q Do you know why the university would hire a research  
5 faculty member who doesn't have any teaching responsibilities?

6 A Because research is an important part of what the  
7 university does, in addition to the research, in addition to the  
8 teaching. So research faculty members support and enhance the  
9 research that's carried out at the university.

10 Q Now with respect to this Saudi student that we could not  
11 come to an agreement on what to call her classification, is she  
12 paid or am I correct in understanding that she receives payments  
13 directly from the Saudi government, is that correct?

14 A I believe so.

15 Q So that her funding doesn't go through the university's  
16 payroll system?

17 A I believe so.

18 Q When you nod, you have to, you have to answer verbally so  
19 that it shows up on the record. Do you know how long she is  
20 funded by the Saudi government?

21 A I believe it is for a finite number of years. It's not an  
22 indefinite amount of funding. I don't recall the precise length  
23 or the term of her funding, but it is something like three  
24 years.

25 Q And it would be unusual for a PhD student to be able to

1 you go about getting the research done?

2 A Sometimes we get applicants for January rather than  
3 September. We have two semesters. And most of our applicants  
4 apply to start in the September semester, the fall semester.  
5 But we do get applicants for January. And if we learn somewhere  
6 in the middle of September that we needed some additional  
7 students to move onto RA's, we could accept students for the  
8 January semester.

9 Q Are there any other solutions that have been used? Or  
10 does that situation happen very much? Or do professors tend to  
11 be overly optimistic about the funding.

12 A Well, that's more likely to happen than the other problem  
13 which is we don't have enough money to support -- we don't have  
14 enough research funds to support students.

15 Q Have you or is it another option to hire someone other  
16 than or get the work done by someone, the research done by  
17 someone other than a research assistant?

18 A It's possible for a faculty member to hire a post-doctoral  
19 fellow other than a research assistant to do the research.

20 Q You testified that a faculty member does not want to  
21 support or would not want to support a student with a research  
22 assistantship if the student is taking classes, do you recall?

23 A Yes.

24 Q Why is that?

25 A When the student is taking a full load of classes is what

1 I mean to say so that if a student is taking a full load of  
2 classes, they are spending most of their time attending  
3 lectures, studying material, the course material, doing homework  
4 assignments so that it is expected that their whole time is  
5 spent learning the material in the courses that they are taking.  
6 So, therefore, they would not have time to carry out a research  
7 project at the same time.

8 Q So they're not doing the work that's described in the  
9 research grant?

10 MR. BRILL: I object to the question.

11 MR. MEIKLEJOHN: I'll withdraw it. I know, it's okay.  
12 I'll withdraw it.

13 BY MR. MEIKLEJOHN:

14 Q Does Professor Gross have funding?

15 A Yes.

16 Q Do you know what form and sources his funding comes from?

17 A Not exactly. I know that he has some NSF funding. He has  
18 some DOD funding, Department of Defense. He also has funding  
19 from a joint venture between Poly and Professor Gross called  
20 synthesesine (ph.).

21 Q Does he have private funding as well, corporate funding?

22 A I don't know for sure.

23 Q You testified about the maintenance of machinery in  
24 Professor Gross' laboratory. Do you know whether post-doctoral  
25 students are also assigned to maintain machinery in his

1 intellectual merit, you list two aims for the proposal.

2 A Yes.

3 Q And why do you list the aims for this proposal?

4 A Because the NSF and the scientists that review NSF  
5 proposals expect a proposal to have some specific direction and  
6 content. And those aims are my attempt to create that direction  
7 and content.

8 Q So it is something that the NSF expects the proposal to  
9 include, correct?

10 A Yes.

11 Q And it is your understanding that they will not approve  
12 the application if you fail to demonstrate that it has merit in  
13 terms of advancing knowledge, is that correct?

14 A That's correct.

15 Q And that's at least one of the points of the NSF funding  
16 is to advance knowledge in ways that somebody thinks are  
17 valuable?

18 A Yes.

19 Q Now you also at the bottom of the page I think -- wait a  
20 minute, I have to find it. I'm sorry. Under broader impact,  
21 the first paragraph, you talk about the results of this work.  
22 That one of the reasons why it would be interesting is because  
23 of their commercial applications. Do you see that in the middle  
24 of the page?

25 A Yes.



1 Q And then it goes on to talk about how it might lead to the  
2 development of new pharmaceutical products.

3 A Yes.

4 Q And, again, is that something that the NSF is looking for  
5 if they are going to fund this research, that it would have  
6 potential commercial applications?

7 A I don't know if commercial is required, but they expect  
8 that it will somehow have some positive effect on society as a  
9 whole. And commercial applications is one way in which it can  
10 have an impact on society. I mean it is developing new drugs  
11 which will help the health of individuals and society. I would  
12 say that's the more important part, as opposed to the possible  
13 commercial applications.

14 Q Which is why you are working in academia rather than for  
15 Pfizer, I take it. You don't actually have to answer that,  
16 although I might be interested to hear your answer. And without  
17 going through it in detail, Pages 451 through 465 represents a  
18 more detailed description of the work that you are proposing to  
19 do under this grant?

20 A Yes.

21 Q And again in that section, you include a more detailed  
22 description of the benefits to society of the proposed research?  
23 Pages 463 and 464.

24 A Yes.. It goes into more detail about the benefits to  
25 society of the research, potential benefits.

1 Q Pardon?

2 A Depending on your math skills.

3 Q Right. That's a subject that has come up in the past.

4 Under Part B, the personnel cost of the graduate student is  
5 listed as -- one graduate student is listed as \$20,350.

6 A Yes.

7 Q And that would reflect the stipend that was expected to be  
8 paid to one RA?

9 A Yes.

10 Q And it is treated in the funding package as a salary cost,  
11 is that correct?

12 MR. BRILL: Well, I object. The document speaks for  
13 itself.

14 HEARING OFFICER ANDERSON: I'm actually a little confused  
15 by the document. So maybe you can clarify.

16 MR. BRILL: Maybe it doesn't speak for itself.

17 HEARING OFFICER ANDERSON: No, it doesn't actually, not  
18 according to me. I'll allow it.

19 BY MR. MEIKLEJOHN:

20 Q Well, let's work our way down this. The first two  
21 numbers, the \$6,000 and \$7,500 are as we've identified a portion  
22 of your salary and the salary of Professor Arnold, who is your  
23 co-researcher, correct?

24 A Correct.

25 Q And then the total senior personnel cost, \$13,500, would

1 be the sum of those two numbers.

2 A Yes.

3 Q Then moving down to the Line 3, there is a listing for  
4 graduate students. The Number 1, in parentheses, indicates that  
5 there is one graduate student that is projected to be working on  
6 this project, correct?

7 A Yes.

8 Q And then the \$20,350 would be the stipend that was  
9 anticipated to be paid to that student, correct?

10 A The annual stipend, yes.

11 Q Right.

12 HEARING OFFICER ANDERSON: I'm sorry, if I could interrupt  
13 there? Would that include the health care costs that are paid  
14 for the RA? Would that be included in that number?

15 THE WITNESS: No. They would probably be included under  
16 the fringe benefits, which is Section C.

17 HEARING OFFICER ANDERSON: Okay. So it would just be the  
18 stipend?

19 THE WITNESS: Just the stipend.

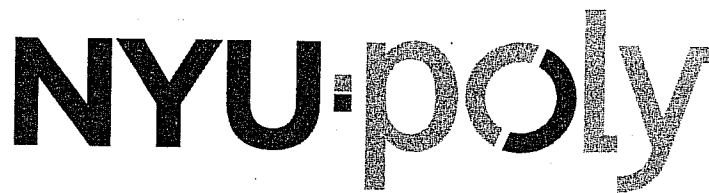
20 HEARING OFFICER ANDERSON: Thank you.

21 BY MR. MEIKLEJOHN:

22 Q And I don't think this has any relevance whatsoever, but  
23 in order to get the numbers to come out there is \$3,000 for  
24 undergraduate students, do you see that?

25 A Yes.

EMPLOYER EXHIBIT  
PAGES



POLYTECHNIC INSTITUTE OF NEW YORK UNIVERSITY

**UNDERGRADUATE AND  
GRADUATE CATALOG  
2009-2011**

ER EX 8



NEW YORK UNIVERSITY

Leading invention, innovation  
and entrepreneurship



# **POLYTECHNIC INSTITUTE OF NEW YORK UNIVERSITY MISSION STATEMENT**

To excel as a leading high-quality research university engaged in education, discovery and innovation with social, intellectual and economic impact in the New York region, the nation and the world.

To achieve this mission, we educate, discover and invent. We engage students seeking educational achievement and opportunity, faculty seeking excellence and relevance, and organizations seeking solutions and talent.

We creatively bring intellectual rigor, technological innovation, and a passion for science to the communities where we work and live and to the citizens of the world.

We innovatively extend the benefits of science, engineering, management and liberal studies to critical real-world opportunities and challenges, especially those linked to urban systems, health and wellness, and the global information economy.

Our learning environment develops the skills to discover and invent, stimulates innovation, and encourages entrepreneurship. We refer to this environment of invention, innovation and entrepreneurship as i<sup>2</sup>e.

It is what has produced generations of PolyThinkers—action-oriented learners who are capable of thinking globally and across multiple disciplines.

# POLYTECHNIC INSTITUTE PROFILE

## INTRODUCTION

Polytechnic Institute of New York University is the nation's second oldest private engineering institution. Today, it is the New York metropolitan area's preeminent resource in science, engineering and technology education and research. A private coeducational institution, Polytechnic has a distinguished history in electrical engineering, polymer chemistry and aerospace and microwave engineering. The Institute is a leader in telecommunications, information science and technology management and is focused on demanding societal issues in the areas of urban systems, health and wellness and global information technology. The Institute prepares graduates to play leading roles in these overarching areas through invention, innovation and entrepreneurship (i<sup>2</sup>e).

The student body includes more than 1,500 undergraduates and approximately 2,400 graduate students. Twenty percent of the undergraduate population are women; 12 percent are black, 13 percent Hispanic and 28 percent Asian. Polytechnic is a leader among the most prestigious nationally ranked research universities.

Polytechnic undergraduate programs prepare students in engineering, science and technology education and research for immediate entry into the professional practice of their specialties or for continued graduate study at Polytechnic or other leading institutions.

## HISTORY

Founded in 1854 as the Brooklyn Collegiate and Polytechnic Institute, the school originally educated young men, ages 9 to 22, and was located on Livingston Street in downtown Brooklyn. In 1889, the collegiate and preparatory departments separated, and the collegiate division adopted the name Polytechnic Institute of Brooklyn. The Institute, historically referred to as "Brooklyn Poly," moved its campus to Jay Street in 1957. In 1961, it opened a Long Island campus in Farmingdale as a graduate and research center.

In 1973, Polytechnic merged with the New York University School of Engineering and Science and was renamed the Polytechnic Institute of New York. The Institute began offering undergraduate programs at its Long Island campus in 1974 and, in 1975, opened the Westchester Graduate Center now located in Hawthorne.

In 1985, the New York State Board of Regents granted the institution university status and the official name became Polytechnic

University.

The next 15 years saw a period of great activity as the University undertook the creation of MetroTech Center, a 16-acre, \$1.5-billion university-corporate park, which was built around Polytechnic's existing buildings and revitalized an area that had been in decline. Polytechnic updated its facilities, renovated its student-center building and built a new home for its library and for the Center for Advanced Technology in Telecommunications. The University also began to offer several programs in management of technology and financial engineering in the heart of Manhattan's high-technology and financial district.

During this time, the University launched the Campaign for Polytechnic—*Fulfilling the American Dream* to raise \$275 million to transform itself into one of the nation's premier technological universities. In 1998, Polytechnic received a \$175 million bequest from the estates of Donald F. Othmer, a longtime Polytechnic professor, and his wife, Mildred. At that time, it was the largest single cash gift ever made to a private American university. In 1999, Polytechnic received its second largest contribution from alumnus and former student of Professor Othmer, Joseph J. Jacobs, who gave \$20 million. The campaign successfully concluded on June 30, 2001.

In 2000, Polytechnic began construction on two new buildings on the MetroTech campus: the Joseph J. and Violet J. Jacobs Building, an eight-story academic and athletic facility with state-of-the-art classrooms and laboratories and a full gymnasium; and the 20-story, 400-bed Donald F. and Mildred Topp Othmer Residence Hall, Polytechnic's first on-campus residence hall in Brooklyn. Both buildings opened in summer 2002. In addition, the main academic building, Rogers Hall, underwent a complete renovation to create several new instructional facilities and upgrade instructional equipment in existing facilities. An expanded cafeteria, seating 300, opened in fall 2002, and a new student lounge opened in spring 2003.

In 2008 the University entered into a formal affiliation with New York University in recognition of the synergies between engineering and technology and medicine, dentistry, public policy, law and the arts. Now known as Polytechnic Institute of New York University, or NYU-Poly, Polytechnic has further enhanced its capability to prepare leaders to address the challenges of the 21st century.

The Institute also has redirected its education programs, consolidating all undergraduate programs at its MetroTech

while still offering graduate programs in Long Island and Westchester. In addition, Polytechnic delivers on-site and online programs locally and globally to corporations, government entities and individuals.

## ACADEMIC PROGRAMS

Polytechnic offers the degree Bachelor of Science in 16 disciplines, covering computer science, engineering, the physical sciences, mathematics and liberal arts. The degree Master of Science is offered in 33 disciplinary specialties. The degree Master of Engineering in Interdisciplinary Studies in Engineering is offered with different concentrations, including wireless innovation. The degree Doctor of Philosophy is offered in 11 disciplines.

Bachelor of Science programs prepare students for entry-level employment in various professional disciplines, and for study at an advanced level. Master of Science programs are oriented toward professional development in the subject area and can be arranged to provide the core coursework for PhD study. The PhD is the terminal research degree for those who seek careers in industrial or academic research. The degree requires an independent research dissertation that advances the state of the art in the discipline of study. Details of academic degree requirements and detailed program descriptions are given in Part 3 of this catalog.

## ACADEMIC DEPARTMENTS

The Institute faculty is grouped into academic departments for administrative purposes. Each degree program is planned and administered by the faculty of a department (or, in some cases, by faculty from two co-operating departments). Academic departments manage instructional laboratories and most research laboratories.

Part 2 of this catalog describes the faculty and facilities of the following eleven academic departments, and identifies the degrees that each department supervises.

- Chemical and Biomolecular Engineering
- Chemical and Biological Sciences
- Civil Engineering
- Computer Science and Engineering
- Electrical and Computer Engineering
- Financial and Risk Engineering
- Humanities and Social Sciences
- Mathematics
- Mechanical and Aerospace Engineering
- Physics
- Technology Management

PETITIONER EXHIBIT  
PAGES



## **SECTION 25 OF POLYTECHNIC UNIVERSITY POLICIES AND PROCEDURES for CONTRACTS AND GRANTS ADMINISTRATION**

### **I. Introduction**

Polytechnic University is in a position of trust with respect to many external organizations and agencies. Additionally, all University personnel have a responsibility to the government, donors, parents and students and other sources of funds to use such funds prudently, ethically, and for the purpose for which they are designated. Ethical conduct has been and continues to be the very foundation of our institution. The University recognizes that the federal Government is a major source of funds for the University, and Polytechnic's dealings with the federal government impose additional responsibilities. The University will advise and train its personnel about the applicable laws and requirements. The administration, staff, faculty (Polytechnic personnel) are expected to assume personal responsibility and accountability for understanding the relevant laws, regulations, contract and grant requirements and for ensuring compliance. Standards of administration for state, and private grants and agreements will be at least as high as federal standards, and in situations in which agreements are not clear, federal standards will be used. Principal investigators and faculty have a duty to inform those under their supervision that they should comply with the applicable standards and, if they do not comply, to take disciplinary action. The University will fully comply with all such laws and contract and grant requirements, as well as with its own high standards of integrity and quality.

We will transact the University's business in compliance with all laws, and contractual and grant obligations, we will comply with standards of integrity and quality, and strive to maintain those standards at all times. Business activities undertaken on behalf of the University with the public, the government, suppliers, students and one another must reflect the highest standards of honesty, integrity, and fairness. Care will be taken to ensure proper record keeping, allocation and charging of costs. All Polytechnic personnel must be especially careful to avoid even the appearance of misconduct or impropriety. Polytechnic personnel will report suspected violations of any applicable law, regulation, grant or contract requirement, through standard management channels starting with immediate supervisors, but will also have confidential access to the Director of Internal Audit.

*Regulatory requirements.* Polytechnic University receives research funding from federal, state, and private sponsors (e.g.-individuals, corporations, foundations, other universities). The federal government issues various regulations with which Polytechnic University must comply. Important documents from the Office of Management and Budget are the May 1998 revision to Circular A-21: Cost Principles for Educational Institutions (A-21) and the August 1997 revised Circular A-110: Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-

**SECTION 25 OF POLYTECHNIC UNIVERSITY  
POLICIES AND PROCEDURES for  
CONTRACTS AND GRANTS ADMINISTRATION**

- J. Program Income.** Program income is gross income received that is directly generated by the federally funded project during the grant period. It includes fees for services performed, use or rental of real or personal property acquired with grant funds, sale of commodities or items generated under a grant agreement or payments of principal and interest on loans made with grant funds. If authorized by either regulations or contract costs incident to generation of program income may be deducted from gross income to determine program income. It does NOT include interest on grant funds, rebates, credit discounts, refunds. It does not include proceeds of the sale of equipment or property.
- K. Real property acquisition and relocation assistance.** The URA Act of 1970 requires uniform and equitable treatment of persons displaced by federally assisted programs from homes or businesses. Federal requirements govern the determination of payments for replacement housing, rental assistance, down payment assistance, etc. (49 CFR, part 24, DOT). Not currently applicable to Polytechnic.
- L. Reporting.** Recipients must use the following standard forms:
- (1) Financial Status Report (FSR), SF-269 or SF-269A
  - (2) Request for Advance or reimbursement, SF-270
  - (3) Outlay Report and Request for Reimbursement for Construction programs, SF-271.
  - (4) Federal Cash Transaction Report, SF-272.

Please see Appendix for Forms and Instructions, which may be copied. To Fax on Demand requests for forms to OMB, use telephone 202-395-9068: and:

SF-269 Form #2690  
SF-269A Form #2691  
SF-270 Form #2700  
SF-271 Form # 2710  
SF-272 Form # 2720  
SF-272A Form # 2721

<<http://www.whitehouse.gov/wh/edp/omb/>>

Recipients shall submit performance reports at least annually but not more frequently than quarterly if not specified in the contract. Performance reports will contain comparison of actual accomplishments with the goals and objectives for the period, reason why the established goals were not met, other pertinent information including analysis of cost overruns or high unit costs. Although PI's may submit performance reports (only) directly to the sponsoring agency, a copy must also be sent to Contracts and Grants for inclusion in the permanent work file.

Special reporting. We may be required to submit other reports which may be used for such purposes as allocating program funding. (See A-102, Common Rule, performance reporting .40, financial reporting .41; A-110, performance reporting .51, financial reporting .52).

### **Intellectual Merit**

This proposal seeks funds to study both spontaneous and laser-induced nucleation in levitated supersaturated microdroplets having diameters ranging from about 5 to 50  $\mu\text{m}$ , corresponding to a range of volumes from 0.065 to 65 pL. The small volumes achievable in microdroplets allow the attainment of significantly higher supersaturations than in bulk solutions, creating conditions favorable for the creation of metastable polymorphs. Such microdroplets provide a means of eliminating impurity-induced heterogeneous crystallization, providing a unique opportunity to study polymorph control by creating designer interfaces using surfactant molecules. Microdroplets also provide a means for studying nonphotochemical laser-induced nucleation (NPLIN) in an ultrapure, impurity-free environment, providing a method for precisely measuring laser-induced nucleation rates.

The first aim of this proposal is to study polymorph control of organic compounds in the spontaneous nucleation of levitated supersaturated microdroplets, as a function of microdroplet volume, with and without surfactants. Surfactants will serve as designer templates for nucleation of specific polymorphs. We anticipate that these studies will reveal unusual and even unknown polymorphs and hydrates, which will be identified by deliquescence points, Raman spectra and weight changes.

The second aim of this proposal is to collect precise quantitative data on NPLIN of supersaturated solutions of several organic and inorganic compounds in microdroplets. The more controlled conditions of microdroplets allow the more precise measurement of critical laser intensities for NPLIN at a given supersaturation, which can be related to reductions in nucleation free-energy barriers and other nucleation parameters that can help distinguish different proposed mechanisms.

### **Broader impact**

Although nucleation of crystalline materials has been investigated for decades, it remains a poorly understood phenomenon that will only be unraveled through new and innovative methods. If this project succeeds it will open considerable opportunities for exploring the nucleation, crystallization, and polymorphism of innumerable organic compounds that are interesting because of their commercial applications. New polymorphs represent new materials. The methodology developed in this proposal may provide a unique approach to the discovery of new polymorphs, which is of vital importance in the development of new pharmaceuticals.

NPLIN in a microdroplet, induced by a single nanosecond laser pulse, offers the possibility of nucleation on demand, delivered with micrometer spatial and nanosecond temporal precision. It is potentially a tool for probing the earliest stages of the birth of a crystal.

Both PIs of this proposal have considerable experience mentoring undergraduate students, and the proposed research lends itself to such training through summer research internships, funding for which is requested in this proposal.

# SUMMARY PROPOSAL BUDGET

YEAR 1

ORGANIZATION <b>Polytechnic University of New York</b>				FOR NSF USE ONLY		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR <b>Bruce A Garetz</b>				PROPOSAL NO.	DURATION (months)	
				AWARD NO.	Proposed	Granted
A. SENIOR PERSONNEL: P/PPD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)						
	CAL	ACAD	SUMR	Funds Requested By propose*	Funds granted by NSF (if different)	
1. <b>Bruce A Garetz - PhD</b>	0.00	0.00	0.50	\$ 6,000	\$	
2. <b>Stephen Arnold - PhD</b>	0.00	0.00	0.50	7,500		
3.						
4.						
5.						
6. ( 0 ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0		
7. ( 2 ) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.00	13,500		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. ( 0 ) POST DOCTORAL SCHOLARS	0.00	0.00	0.00	0		
2. ( 0 ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0		
3. ( 1 ) GRADUATE STUDENTS				20,350		
4. ( 1 ) UNDERGRADUATE STUDENTS				3,000		
5. ( 0 ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0		
6. ( 0 ) OTHER				0		
TOTAL SALARIES AND WAGES (A + B)				36,850		
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				5,111		
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				41,961		
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)						
TOTAL EQUIPMENT				0		
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				2,000		
2. FOREIGN				0		
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$	0					
2. TRAVEL	0					
3. SUBSISTENCE	0					
4. OTHER	0					
TOTAL NUMBER OF PARTICIPANTS ( 0 ) TOTAL PARTICIPANT COSTS				0		
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES				5,000		
2. PUBLICATION COSTS/DOCUMENTATION/DISEMINATION				1,000		
3. CONSULTANT SERVICES				0		
4. COMPUTER SERVICES				0		
5. SUBAWARDS				0		
6. OTHER				21,000		
TOTAL OTHER DIRECT COSTS				27,000		
H. TOTAL DIRECT COSTS (A THROUGH G)				70,961		
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) All direct costs except G6 (Rate: 37.6000, Base: 49961)						
TOTAL INDIRECT COSTS (F&A)				18,785		
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				89,746		
K. RESIDUAL FUNDS				0		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				\$ 89,746	\$	
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$		
PI/PPD NAME <b>Bruce A Garetz</b>				FOR NSF USE ONLY		
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION		
				Date Checked	Date Of Rate Sheet	Initials - ORG

1 \*ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

ER000473

**SECTION 25 OF POLYTECHNIC UNIVERSITY  
POLICIES AND PROCEDURES for  
CONTRACTS AND GRANTS ADMINISTRATION**

Federal awarding agencies may impose additional requirements as needed provided such applicants are notified in writing as to: the nature of the additional requirements, the reason why the additional requirements are being imposed, the nature of the corrective action needed, the time allowed for completing the corrective actions, and the method for requesting reconsideration of the additional requirement imposed.

- .16 Institutions of higher education and other non profit organizations receiving federal funds MUST give preference in their procurement programs funded with federal funds to the purchase of recycled products pursuant to EPA guidelines.
- .17 Annual certifications and representations shall be signed by responsible officials with authority to ensure recipients' compliance with pertinent requirements.

**The procedure at Polytechnic University is outlined below:**

- (1) The Contracts and Grants Office and the Office of the Vice President for Engineering and Dean each should receive a copy of the proposal at least five working days before the deadline date and optimally ten working days before the deadline. All proposals must be approved by the Vice President for Polytechnic University (the authorized official) before they can be sent. Therefore sufficient time must be allowed for proposals to be vetted in a reasonable way.
- (2) Each proposal must have a budget narrative. The budget should include all costs, both direct and indirect
- (3) The budget narrative should include names of persons, if known, to work on the project, titles, salaries. Multi year agreements should include an inflation factor.
- (4) If tuition is involved, credit hours and charge per credit, as well as total charge, must be indicated. Mandatory registration fees should be included unless they are not allowed. Multi year agreements must consider possible tuition increases
- (5) Supplies and equipment should be detailed: computer equipment, lab equipment, chemical supplies, stationery supplies, printing supplies, etc.
- (6) Proposed travel must be detailed. Foreign and domestic travel must be distinguished, number of trips, destinations, and the like.
- (7) If there are consultants to be costed, they must be identified, and resumes attached. Verification with suspension and debarment requirements must be indicated (see above section). Conflicts of Interest certifications must be included. If current Polytechnic faculty are involved on a remunerated consulting basis, that must have been pre approved by the Provost.
- (8) Any cost sharing must be identified as to source. A letter of commitment to Polytechnic from any and all outside sources must be attached. Please note that cost sharing may be voluntary but once approved by the federal government it is an obligation of the University.
- (9) Proposals should be reviewed for cost effectiveness.
- (10) Private sponsored will be charged an administrative fee (5% of revenue) because Polytechnic will waive overhead costs. This must be budgeted.
- (11) Executive Director, Contracts and Grants, is available to prepare budgets at the pre-proposal stage. To avoid delays he should be consulted.
- (12) Each investigator of a research project or an educational support activity funded or proposed by a federal agency is required to disclose to the Vice President and Dean

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therefore eligible for social security benefits only. These classes, along with  
their account (ADP) designators include:

>Adjunct AY	(5004)
>Adjunct summer	(5004)
>Special Comp	(5008)
>Teaching Fellow	(5012)
>Research Fellow	(5011)
>PT Research Asst.	(5005)
>Hourly/ Casual	(5009)
>Students	(5006)
>Work Study	(5007)

**This list should be annually compared with the list maintained by Human Resources.**

- b. Review the listing of labor sub-codes identified as Part-time (therefore, non-benefit eligible) with the Benefits Manager to ensure its completeness.

**3. Fringe benefit cost pools**

- a. Establish two FB cost pools, one consisting of the expenditures paid by Polytechnic University on behalf of its employees for social security; the other pool contains all other fringe benefit costs. Typically fringe costs include the following:
- Health Insurance,
  - Life Insurance,
  - Disability Insurance,
  - Post retirement benefits (i.e. pensions),
  - Social security taxes,
  - Unemployment compensation,
  - Worker's compensation,
  - Sabbatical leave to employees,
  - Tuition remission to employees.

In addition, at Polytechnic University, vacation, holiday, sick leave pay, and other paid absences are budgeted for and charged directly to grants and contracts as part of gross salaries, based on specific identification of the costs to individual employees.

- b. Ensure that pension plan and other post retirement benefit costs other than pensions (health, life etc.) assigned to the fiscal year, are determined in accordance with generally accepted accounting principles (including Financial Accounting Standards Board Statement #106, on Post Retirement Benefits Other Than Pensions). For example, under Defined Benefit Plans the amount

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assigned needs to be funded within six months after the close of the fiscal year, and under Defined Contribution Plans the required contributions must be funded.

- c. Add to or deduct from the pool any **carry-forward adjustment** to compensate for the difference between the costs used to compute an earlier period fixed rate and actual costs determined through an audit.
- d. Identify and remove all fringe benefit costs designated as unallowable for reimbursement in Office of Management and Budget Circular A-21 or Federal Acquisition Regulations. Such unallowable fringe benefits include tuition remission provided to students, tuition remission provided to employee family members. It also does not include costs associated with administration of fringe benefits.
- e. List each allowable benefit category and total expenditures under each for the latest fiscal year. Adjust each of the benefit costs based on anticipated cost increases due to inflation and other factors. Isolate the FICA estimated benefit costs from all others. Total the remaining list of benefit costs as estimated. The cost figures for the fiscal year should be obtained from UFS. As previously noted, severance payments are identified from payroll ADP reports (Code 5); while early retirement figures are taken off a manually prepared payment forecast which lists each retiree and their expected distribution.

**C. Calculate the F.B. Rate(s)**

- a. **For all employees - Social Security benefits only.**  
Using the adjusted total salary & wage base as computed in step "1c." above as the denominator and the Social Security (FICA) benefit costs from "3e." above, as the numerator, calculate the fringe benefit rate for all employees to recover FICA expenses.
- b. **For full-time employees - Add all other benefits.**  
Using the labor base for full time employees only, established under "2a." above, as the denominator, and the fringe benefit pool for all other fringe benefit costs (excludes FICA), as the numerator, compute the fringe benefit rate for full time employees by dividing.

**D. Application of the Fringe Benefit Rate(s)**

- a. **For all employees - Social Security benefits only.**  
Apply the fringe benefit rate for all employees to all salaries and wage labor costs charged to a grant or contract, to determine the amount of fringe benefit costs applicable to the respective government project.
- b. **For full-time employees - Add all other benefits.**  
Apply the fringe benefit rate for full-time employees to all salaries and wage labor costs charged to a grant or contract, except for those labor costs related to part-time employees (for sub-codes refer to section "2a."), to determine the amount of fringe benefit costs applicable to the respective government project.

**POLYTECHNIC INSTITUTE OF NEW YORK UNIVERSITY**  
(Formerly Known as Polytechnic University)

Statement of Activities  
Year ended June 30, 2010  
(In thousands)

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Operating revenues:				
Tuition and fees	\$ 106,773	—	—	106,773
Less:				
University-provided financial aid	(36,977)	—	—	(36,977)
Endowment-funded financial aid	(1,171)	—	—	(1,171)
Net tuition and fees	68,625	—	—	68,625
State appropriations	221	—	—	221
Federal grants and contracts	8,293	—	—	8,293
<del>State and local grants and contracts</del>	<del>1,956</del>	—	—	<del>1,956</del>
Private grants and contracts	—	3,813	—	3,813
Indirect cost recovered	3,199	—	—	3,199
Private gifts and bequests	1,228	991	42	2,261
Investment return utilized (note 4)	1,302	1,498	—	2,800
Other income	645	—	—	645
Sales and services of auxiliary enterprises	4,756	—	—	4,756
Net assets released from restrictions (note 12)	10,570	(4,600)	(5,970)	—
Total operating revenues	100,795	1,702	(5,928)	96,569
Operating expenses (note 14):				
Instruction	39,148	—	—	39,148
Research	12,076	—	—	12,076
Academic support	8,621	—	—	8,621
Student services	7,803	—	—	7,803
Institutional support	15,032	—	—	15,032
Auxiliary enterprises, primarily student-related	2,653	—	—	2,653
	85,333	—	—	85,333
Operation and maintenance of plant	9,710	—	—	9,710
Interest expense	5,982	—	—	5,982
Depreciation expense	5,319	—	—	5,319
Total operating expenses	106,344	—	—	106,344
(Deficiency) excess of operating revenues over operating expenses	(5,549)	1,702	(5,928)	(9,775)
Nonoperating activities:				
Investment return greater than amount utilized in operations (note 4)	7,583	—	—	7,583
Investment income on annuity agreements	—	28	—	28
Postretirement-related charge other than net periodic postretirement benefit cost (note 11)	(2,634)	—	—	(2,634)
Increase from nonoperating activities	4,949	28	—	4,977
Change in net assets	(600)	1,730	(5,928)	(4,798)
Net assets (deficit):				
Beginning of year	(521)	1,823	90,193	91,495
End of year	\$ (1,121)	3,553	84,265	86,697

See accompanying notes to financial statements.

Per. Ex. 25